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1892/53

ANNUAL REPORT  
OF THE  
WATER COMMISSIONERS  
OF THE  
CITY OF BROCKTON

FOR THE YEAR ENDING NOVEMBER 30, 1893.



BOSTON:  
WINSHIP, DANIELS & CO., PRINTERS.  
1894.





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# WATER BOARD.

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ENOS H. REYNOLDS, *Chairman.*

HORACE KINGMAN, *Superintendent.*

FRANCIS B. GARDNER, *Clerk.*

ANNIE L. GARDNER, *Assistant Clerk.*

JAMES W. LOCKE, *Foreman of Service Work.*

JOHN HAMBLETT, *Inspector of Meters.*

LYMAN J. WILBUR, *Engineer at Pumping Station.*

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OFFICE : ROOM 12, CITY BLOCK.

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Regular Meetings of the Board, Thursdays at 7.30 P. M.



## WATER COMMISSIONERS' REPORT.

*To his Honor the Mayor and the City Council of the City of Brockton: —*

GENTLEMEN, — The Board of Water Commissioners respectfully submit their annual report for the year ending Nov. 30, 1893.

The work and business of this department steadily increases each year. It may be of interest to look at the increase during the past ten years.

November 30, 1883, eighteen miles of main pipe and five miles of service pipe had been laid, and the fire hydrants numbered 183. 389 meters were in use. The total receipts for the year were \$9,150.43.

The growth of the city during the ten years has been rapid, and this department has kept pace with it. The mains have been extended in all directions, and new takers have been added all over the city. November 30, 1893, there are forty-nine miles of mains and seventeen miles of service pipe, 421 fire hydrants, and 2,258 meters. The total receipts for the year ending November 30, 1893, were \$45,638.23.

In addition to all the above work a stand-pipe and pumping station have been erected, and the whole system given the benefit of the high service.

Only two leaks in the mains have occurred during the past year; one was in the twelve inch on Crescent St., under the railroad track, and the other in the six inch on Perkins St. Twelve joint leaks have been reported and repaired.

The small number of leaks under the increased pressure of the high-service system, shows the thoroughness of the work in laying the mains.

At the reservoir, in addition to necessary repairs to the paving on the inner slope of the dam, the brush has been cut on both sides to the city's line; the trench at the upper end has been cleaned out.

The quality of the water has been good, with the exception of a short time last winter when the reservoir was entirely closed with ice. July 6 it was full; it commenced to fall gradually, and continued falling until October 21, when it reached the lowest point, forty-one inches below high-water mark. Since then it has been steadily rising, and before January 1, 1894, will be again full.

At the pumping station we have added another boiler, giving increased power for pumping. The stand-pipe has been painted two coats, inside and outside. The whole plant is in an excellent condition.

The largest amount pumped in any one day during the year was 2,049,000 gallons, July 17; the smallest amount pumped was 376,939 gallons, May 27.

The greatest consumption is during the hot, dry weather of the summer, and it is principally due to the large amount used for lawn and street sprinkling. The great quantity used upon the streets adds to our pumping expenses, and the department gets neither compensation nor credit for it. It would seem to be equitable that the Water Department should receive one or the other, and it would also seem to be for the benefit of the whole city, if more economy was practised in this matter.

The appropriation for hydrant service remains the same each year, though, as has been shown, the number of hydrants has more than doubled. In our opinion it would be better to fix a stated sum for *each* hydrant, thus adding to the amount appropriated as the number of hydrants increase.

For several years this Board has called your attention to



the necessity of an additional supply main, and have recommended that it be laid through the proposed North Montello Street extension and Montello Street to Centre Street. We are glad to know that the project and the proposed route have both received your indorsement.

To the City Council of 1893 and, in particular, the Joint Standing Committee on water belongs the credit of laying out North Montello Street, and also of authorizing the issue of the necessary bonds to provide the money for the work.

We congratulate the citizens that an additional main is now an assured thing. Proposals have been issued for the pipe, and we intend to begin the laying of the same as early in the coming season as possible, and to push it to completion.

In 1892 the Legislature authorized an issue of bonds to the amount of \$100,000; \$13,000 was issued that year for construction purposes, and the present year \$25,000 was issued for the same purposes, and you have recently granted authority to issue the remaining \$62,000 for the purpose of laying the new main. As many extensions of the mains will be called for and required the coming year, we recommend that your honorable body petition the incoming Legislature for authority to issue an additional loan of \$100,000.

We would also recommend that bonds to the amount of \$25,000 be issued, and the proceeds placed to the credit of the Construction Account of this department for use the coming season.

#### COST OF WORKS.

1877.	The town expended under the supervision of the Water Committee	\$ 33,508.65
1880-1.	On account of construction	132,876.86
	<i>Amount carried forward</i>	<u>\$166,385.51</u>

	<i>Amount brought forward</i>	.	.	.	\$166,385.51
1881.	Pipe Line Account	.	.	.	37,529.96
1882.	Construction	.	.	.	31,448.44
1883.	"	.	.	.	28,335.88
1884.	"	.	.	.	45,364.86
1885.	"	.	.	.	25,987.91
1886.	"	.	.	.	69,728.95
1887.	"	.	.	.	25,201.37
1888.	"	.	.	.	22,820.26
1889.	"	.	.	.	12,936.74
1890.	"	.	.	.	24,719.85
1890.	High service	.	.	.	17,621.83
1891.	Construction	.	.	.	24,582.31
1891.	High service	.	.	.	29,422.87
1892.	Construction	.	.	.	27,533.14
1892.	High service	.	.	.	1,515.20
1893.	Construction	.	.	.	21,564.77
					<hr/>
					\$602,699.85

## CONSTRUCTION ACCOUNT.

*Receipts.*

Unexpended balance from 1892	.	\$ 2,332.24
Proceeds of bonds sold	.	25,000.00
Received for stock and labor	.	3,129.19
" from sale of stones and hand-cart	.	27.00
" from Clayton Air Compressor Works, for governor returned	.	15.00
Amount refunded by Isam Mitchell & Co.	.	1.60
		<hr/>
		\$30,505.03
<i>Amount carried forward</i>	.	\$30,505.03



*Expenditures.*

<i>Amount brought forward</i>	.	.	.	\$30,505.03
Paid pay rolls for labor, December	.	\$	225.00	
January	.		218.50	
February	.		174.00	
March	.		174.00	
April	.		272.25	
May	.		1,107.76	
June	.		1,040.21	
July	.		1,209.42	
August	.		924.36	
September	.		886.52	
October	.		1,071.60	
November	.		456.12	
The George Woodman Co., pipe			6,666.47	
Ludlow Valve Mfg. Co., hydrants				
and valves	.		1,374.19	
Chadwick Lead Works, supplies			647.13	
Cunningham Iron Works Co.				
tubular boiler	.		635.40	
E. T. Sampson, labor	.		423.26	
Dighton Furnace Co., service				
boxes	.		397.75	
Louis Hawes, services as civil				
engineer, in making plans				
and estimates for new water				
main	.		296.69	
Old Colony Railroad Co., freight			280.89	
Joslyn Express Co., jobbing and				
freight	.		251.96	
L. R. Churchill, supplies and				
labor	.		231.31	
<i>Amounts carried forward</i>	.	\$18,964.79	\$30,505.03	

<i>Amounts brought forward</i>	.	\$18,964.79	\$30,505.03
Paid J. B. Nye, Jr., building sheds at pumping station . . . . .		220.00	
Builders Iron Foundry, pipe, etc.		199.40	
Flagg & Bartlett, labor with team . . . . .		192.00	
Bray & Blake, heater, pipe, etc.		179.06	
A. M. & W. F. Ober, gate boxes		164.15	
J. M. Jenney, smithwork . . . . .		163.40	
J. B. Howard, loam . . . . .		159.33	
James H. Nye, grain . . . . .		154.88	
Continental Grate Co., furnace grate . . . . .		112.50	
A. A. Dunbar, horse . . . . .		105.00	
Brockton Iron and Brass Foundry Co., sidewalk box . . . . .		86.25	
E. O. Noyes, supplies . . . . .		80.37	
Walworth Mfg. Co., supplies . . . . .		79.27	
J. T. Corcoran, lead corporations and labor . . . . .		61.35	
W. O. Carver, harness, etc. . . . .		60.35	
Braman, Dow & Co., heater . . . . .		58.38	
David Gray, plants . . . . .		54.90	
Elmer C. Packard, hay, grain and coal . . . . .		53.24	
J. L. Merrick & Co., plants . . . . .		44.00	
Goddard & Rogers, labor . . . . .		43.58	
S. B. Corliss, stone work . . . . .		38.00	
Morse Twist Drill and Machine Co., drills . . . . .		36.60	
Andrew Gale, carting and plac- ing boiler at pumping station . . . . .		32.30	

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*Amounts carried forward* . \$21,343.10 \$30,505.03



<i>Amounts brought forward</i>	\$21,343.10	\$30,505.03
Paid Union Water Meter Co., bands	28.00	
Brockton Rubber Co., rubber goods . . . . .	23.25	
H. W. Johns Mfg. Co., covering steam surface . . . . .	20.77	
Allen Crocker & Son, smithwork	19.90	
Gillespie Bros., wood . . . . .	16.88	
Waldo Bros., cement . . . . .	16.80	
H. B. Winship, hemp . . . . .	13.45	
C. T. Williams, oil . . . . .	10.81	
P. J. Lynch, smithwork . . . . .	10.50	
John A. Jackson, labor and lumber . . . . .	8.75	
Burr & Smith, stock and labor	8.73	
American Supply Co., rope . . . . .	6.63	
R. E. Howard, supplies . . . . .	6.50	
H. H. Goss, cards for stop location index . . . . .	5.50	
J. Stevenson, smithwork . . . . .	4.80	
Brockton Gas Light Co., coke	3.90	
Isam Mitchell & Co., lumber and cement . . . . .	3.35	
J. G. Wilde, lawn dressing . . . . .	3.00	
Perrin, Seamans & Co., brake for pump . . . . .	2.75	
C. E. Ripley, oil . . . . .	2.45	
Emery & Packard, leather . . . . .	1.95	
Burr & Cole, repairing . . . . .	1.50	
Ira Copeland, stone . . . . .	1.00	
John P. Johnson, wood . . . . .	.50	
	<hr/>	
	\$21,564.77	
Balance . . . . .	8,940.26	
	<hr/>	
	\$30,505.03	\$30,505.03

## MAINTENANCE ACCOUNT.

*Receipts.*

Received from meter rates . . .	\$26,250.78	
faucet rates . . .	9,968.96	
water for building pur- poses . . .	22.65	
City of Brockton for hydrant service . . .	3,000.00	
W. C. Flagg, ice priv- ilege (paid City Treasurer) . . .	100.00	
interest on balances . . .	9.81	
	<hr/>	\$39,352.20

*Expenditures.*

Paid W. F. Cleaveland, salary as superintendent . . .	\$ 121.42	
W. F. Cleaveland, use of team . . .	24.25	
“ “ “ cash expenses . . .	8.00	
Horace Kingman, salary as super- intendent . . .	1,088.69	
Horace Kingman, use of team . . .	217.32	
“ “ “ cash expenses . . .	10.85	
F. B. Gardner, salary as clerk . . .	700.00	
“ “ “ clerical assistance . . .	200.00	
“ “ “ cash expenses . . .	68.92	
E. H. Reynolds, services as com- missioner for the year 1893 . . .	41.00	
Labor pay rolls . . .	978.85	
E. E. French, care of reservoir . . .	100.00	
So. Mass. Telephone Co., rent of telephones . . .	82.67	
	<hr/>	
<i>Amounts carried forward . . .</i>	\$3,641.97	\$39,352.20



<i>Amounts brought forward</i>	.	\$3,641.97	\$39,352.20
Paid C. W. Thayer, printing postals and envelopes	. . . . .	76.25	
E. C. Packard, hay, grain and coal	. . . . .	74.15	
A. H. Vose, veterinary services		45.00	
Tolman's Job Print, printing	.	43.85	
J. L. Fairbanks & Co., stationery		36.13	
G. A. Goodall, printing	. . . . .	25.15	
James H. Nye, grain	. . . . .	23.38	
L. R. Churchill, plumbing	.	15.10	
W. O. Carver, repairs to wagon		13.50	
Enterprise Pub. Co., advertising		12.53	
O'Neil & Howes, white wood brackets	. . . . .	12.50	
L. Richmond & Co., glass, labor, etc.	. . . . .	11.88	
E. O. Noyes, supplies	. . . . .	11.71	
Frost & Adams, mounting paper		11.50	
Waldo Bros., cement	. . . . .	11.25	
Brockton Pub. Co., advertising	.	11.05	
Isam Mitchell & Co., lumber	.	10.95	
J. B. Howard, labor	. . . . .	7.00	
A. S. Porter & Sons	. . . . .	6.00	
Town of Avon, real estate tax	.	5.51	
R. T. C. Spooner, plumbing	.	5.40	
White Bros., concreting	. . . . .	5.00	
Brockton Book Bindery and Sup- ply Co., supplies	. . . . .	4.85	
Lewis Porter, lumber	. . . . .	4.66	
Walworth Mfg. Co., diaphragms for pumps	. . . . .	3.80	
Howard & Caldwell, blankets	.	2.50	
<i>Amounts carried forward</i>	.	\$4,132.57	\$39,352.20

<i>Amounts brought forward</i>	.	\$4,132.57	\$39,352.20
Paid W. H. Flagg, repairing harness		1.05	
N. J. Wentworth, electric repairs		1.03	
Carpenter & Tremaine, repairing electric light	.	1.00	
C. C. Buchanan, repairing wagon		1.00	
H. L. Aiken, stationery	.	.60	
Allen Crocker & Son, smith-work	.	.35	
C. C. Merritt's Express, jobbing		.30	
		<hr/>	
		\$4,137.90	

## PUMPING EXPENSES.

Paid Lyman J. Wilbar, services as engineer	.	\$999.96	
Hutchinson & Kimball, coal and carting	.	759.62	
L. Richmond & Co., painting stand-pipe, etc.	.	371.08	
C. F. Porter, coal	.	195.40	
Edward Kendall & Sons, repairing condenser	.	152.05	
Elmer C. Packard, coal	.	131.19	
Charles H. Reed & Co., oil	.	50.96	
J. B. Howard, carting coal	.	20.00	
Henry R. Worthington, valves	.	15.36	
Goddard & Rogers, labor and supplies	.	13.66	
Labor at pumping station	.	13.11	
T. J. Kinney, pipe	.	7.26	
F. E. White, governor	.	7.00	
		<hr/>	
<i>Amounts carried forward</i>	.	\$2,736.65	\$39,352.20



<i>Amounts brought forward</i>	\$2,736.65	\$39,352.20
Paid Tolman Electric Job Print, pump- ing reports	6.25	
E. T. Sampson, labor at pumping station	5.82	
The Sewing Machine Supply Co., cotton waste	5.78	
Cunningham Iron Works Co., repairing boiler	5.65	
Allen Crocker & Son, smithwork	4.15	
W. O. Drake, supplies	3.13	
T. J. Pritchard, labor, slate, etc.	2.72	
E. W. Holmes, labor on gutter at pumping station	1.25	
Tuck Mfg. Co., supplies	1.00	
R. T. C. Spooner, supplies	1.00	
L. R. Churchill, supplies	.36	
	<hr/>	
	\$2,773.76	
Expenditures of Maintenance Account	4,137.90	
	<hr/>	
Total expenditures	\$6,911.66	
Balance applicable to payment of in- terest on the water debt and to the sinking fund	32,440.54	
	<hr/>	
	\$39,352.20	\$39,352.20

## HIGH SERVICE ACCOUNT.

	<i>Cr.</i>		
By balance from 1892			\$ .05
	<i>Dr.</i>		
Transfer to General Fund		\$ .05	
		<hr/>	<hr/>
		\$ .05	\$ .05

## METER ACCOUNT.

*Receipts.*

Balance from 1892. . . . .	\$1,039.60	
Received for rent of meters for the year 1893 . . . . .	2,838.69	
damage to meters by frost . . . . .	376.15	
		<hr/>
		\$4,254.44

*Expenditures.*

Paid labor, reading and caring for meters . . . . .	\$ 932.50	
Union Water Meter Co., meters and supplies . . . . .	1,844.99	
Union Water Meter Co., repair- ing meters . . . . .	415.17	
Thomson Meter Co., meters . . . . .	484.00	
“ “ “ repairing meters . . . . .	59.00	
Hersey Meter Co., meters . . . . .	117.62	
National Meter Co., meters . . . . .	59.40	
“ “ “ repairing meters . . . . .	2.80	
Thomson Hydraulic Co., meters . . . . .	50.40	
Brockton Book Bindery and Sup- ply Co., books . . . . .	50.55	
E. T. Sampson, brick, etc. . . . .	42.56	
James H. Nye, grain . . . . .	32.45	
M. Pratt, labor . . . . .	11.00	
The George Woodman Co., brush . . . . .	6.14	
	<hr/>	<hr/>
<i>Amounts carried forward</i> . . . . .	\$4,108.58	\$4,254.44



<i>Amounts brought forward</i>	\$4,108.58	\$4,254.44
Paid Tolman Job Print Co., printing	5.21	
Lewis Porter, lumber, etc.	5.03	
	<hr/>	
	\$4,118.82	
Balance	135.62	
	<hr/>	<hr/>
	\$4,254.44	\$4,254.44

## MAIN PIPE LAID, 1893.

Leyden St., from Perkins Ave., south	1,526.45	ft.	6-in. pipe.
Myrtle St., from Blaine St., west	1,000.50	"	" "
Tremont St., from Warren Ave., west	249.20	"	" "
Tribou St., from Warren Ave., west	1,264.75	"	" "
Calmar St., from Main St. to Warren Ave.	961.65	"	" "
Denton St., from Calmar to Tribou	1,167.70	"	" "
Grand St., from Main to Montello St.	393.70	"	" "
Perkins Ave., from Main to Montello St.	403.15	"	" "
Grove Ave., from Grove St., south	547.20	"	" "
Spring Ave., from Grove St., south	734.15	"	" "
Forest Ave., from Ash St., west	1,180.30	"	" "
Herrod Ave., from Main St., west	645.30	"	" "
West Chestnut St., extended, west	783.50	"	8 "
Taylor Ave., extended, south	138.00	"	6 "
Total length	10,995.55	feet	=2.08 miles,

## TOTAL AMOUNT OF MAIN PIPE, DEC. 1, 1893.

24-inch cement lined	6,329
20 " " "	8,950
30 " cast iron	133

16-inch cast iron	.	.	.	.	.	.	1,735
12 " " "	.	.	.	.	.	.	15,207
10 " " "	.	.	.	.	.	.	39,634.3
8 " " "	.	.	.	.	.	.	39,028.3
6 " " "	.	.	.	.	.	.	130,808.85

Total length . . . 241,925.45 feet=45.82 miles.

#### HYDRANTS.

Hydrants set in 1893	.	.	.	.	.	20
Number in use Dec. 1, 1892	.	.	.	.	.	401
Total number in use Dec. 1, 1893	.	.	.	.	.	<u>421</u>

#### GATES.

Number 6-inch gates set 1893	.	.	.	.	.	19
" 8 " " " "	.	.	.	.	.	<u>1</u>
Total	.	.	.	.	.	20

#### GATES IN USE DEC. 1, 1893.

30-inch Ludlow	.	.	.	.	.	.	1
24 " "	.	.	.	.	.	.	5
20 " "	.	.	.	.	.	.	3
16 " "	.	.	.	.	.	.	4
12 " "	.	.	.	.	.	.	16
10 " "	.	.	.	.	.	.	32
8 " "	.	.	.	.	.	.	40
6 " "	.	.	.	.	.	.	<u>278</u>
Total	.	.	.	.	.	.	379

## SERVICE PIPE LAID, 1893.

Number	1-inch cement-lined services	157, length of pipe	3,522	Feet.
"	1 $\frac{1}{4}$ " " " "	8	" " "	261
"	1 $\frac{1}{2}$ " plain iron	2	" " "	39
"	2 " " "	10	" " "	451
				<hr/>
				177
				<hr/>
				4,273

## SERVICE PIPE IN USE DEC. 1, 1893.

1-inch cement lined	.	.	.	.	71,871
1 $\frac{1}{4}$ -inch cement lined	.	.	.	.	2,068
1 $\frac{1}{4}$ -inch plain iron	.	.	.	.	363
1 $\frac{1}{2}$ -inch " "	.	.	.	.	3,611
2-inch " "	.	.	.	.	10,503
Total	.	.	.	.	88,416 feet=16.74- - miles.
Services changed from old to new mains	.	.	.	.	26
Services replaced or enlarged	.	.	.	.	5

## REPAIRS, ETC.

There have been two breaks in mains, caused by defective pipe.

One on Crescent Street, at the railroad crossing,	
cost to repair	\$45.54
One on Perkins Street, south of the bridge, cost	
to repair	10.66
The 2-inch pipe on Glenwood Street, cost to re-	
pair	24.00
12 joint leaks, cost to repair	21.09
8 lead connections for service pipe, cost to repair	45.85
<hr/>	
	\$147.14



## METERS.

*Meters Set, 1893.*

	$\frac{3}{8}$ -in.	$\frac{1}{2}$ -in.	1-in.	1 $\frac{1}{2}$ -in.	2-in.	Total
Union Rotary . . .	143	9	4	1	—	157
Thomson . . .	57	—	—	—	—	57
Neptune . . .	3	—	—	—	—	3
Nash . . .	6	—	—	—	—	6
Hersey . . .	11	—	—	—	—	11
Crown . . .	1	—	—	—	—	1
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total . . .	221	9	4	1	—	235

*Meters Discontinued, 1893.*

$\frac{5}{8}$ -inch Union rotary . . .	.	.	.	.	.	8
$\frac{5}{8}$ -inch Thomson . . .	.	.	.	.	.	2
$\frac{5}{8}$ -inch Crown . . .	.	.	.	.	.	1
						<hr/>
Total . . .	.	.	.	.	.	11

*Meters Changed.*

1 $\frac{3}{4}$ -inch Union rotary to $\frac{5}{8}$ -inch Thomson	
1 $\frac{3}{4}$ -inch “ “ “ 1-inch Union	
3 $\frac{5}{8}$ -inch “ “ “ $\frac{3}{4}$ -inch “	
1 $\frac{5}{8}$ -inch “ “ “ $\frac{5}{8}$ -inch Metropolitan	
1 $\frac{3}{4}$ -inch “ “ “ $\frac{3}{4}$ -inch “	
1 $\frac{5}{8}$ -inch “ “ “ $\frac{5}{8}$ -inch Thomson	
1 $\frac{5}{8}$ -inch Crown “ $\frac{5}{8}$ -inch Hersey	
3 $\frac{5}{8}$ -inch Thomson “ $\frac{5}{8}$ -inch Neptune	
2 $\frac{5}{8}$ -inch “ “ $\frac{5}{8}$ -inch Union rotary	

*Meters in use Dec. 1, 1893.*

	$\frac{1}{2}$ in.	$\frac{3}{4}$ in.	1in.	1 $\frac{1}{2}$ in.	2in.	Total
Union Rotary	1,542	121	19	8	10	1,700
Thompson .	483	—	—	—	—	483
Neptune .	6	—	—	—	—	6
Nash . .	6	—	—	—	—	6
Hersey . .	13	—	—	—	—	13
Crown . .	48	—	—	—	—	48
Metropolitan .	1	1	—	—	—	2
Total .	2,099	122	19	8	10	2,258

*Repairs to Meters.*

257 meters have been repaired at home. 65 meters have been sent to factory for repairs, because of wear. 74 meters were frozen and repaired at factory.

## PUMPING RECORD.

	Hours Run	Hours Average	Strokes	Gallons Pumped	Daily Average	Pounds Coal	Daily Average	Pounds Ashes
Dec., 1892.	184.50	5.95	265,877	18,349,948	591,933.80	36,996	1,193.22	3,650
Jan., 1893.	205.25	6.62	304,922	20,874,521	673,371.64	44,061	1,421.32	4,264
Feb., 1893.	185.50	6.62	258,482	17,550,022	626,786.50	37,314	1,332.64	4,168
Mar., 1893.	210.00	6.77	281,357	18,886,777	609,250.87	39,968	1,289.29	3,724
April, 1893.	187.50	6.25	249,573	16,821,583	560,719.43	34,458	1,148.60	2,666
May, 1893.	204.00	6.58	297,410	20,132,798	649,445.09	36,342	1,172.32	2,779
June, 1893.	271.50	9.05	424,011	30,098,330	1,003,277.66	46,275	1,542.50	3,875
July*, 1893.	212.75	10.13	337,083	22,793,692	1,085,413.90	35,495	1,711.69	2,904
Aug., 1893.	246.00	7.79	378,274	26,626,460	858,918.06	50,932	1,642.96	4,539
Sept., 1893.	210.75	7.02	299,864	21,631,749	721,058.30	35,328	1,177.33	3,055
Oct., 1893.	185.50	5.98	293,139	20,435,993	659,225.58	37,861	1,221.32	3,505
Nov., 1893.	161.25	5.37	260,698	18,578,658	619,288.37	33,492	1,116.40	3,387
Total, 1893.	2,464.50	6.75	3,650,990	252,780,531		468,972	1,284.85	45,516

\* Pump run twenty-one days, City supplied by Gravity ten days.

Water used, not pumped, 13,862,034, estimated.

Total water for year 266,642,565 gallons.

Daily average 730,527 gallons.

Use *per capita* on basis of 30,000 population, 24.01 gallons.

Number gallons pumped per pound of coal, 568.56 gallons.

No allowance for Banking, Heating, or running Aeration Plant 375 hours.

## STOCK AS PER INVENTORY, DEC. 1, 1893.

175 pieces cast-iron pipe . . . . .	\$1,285.76
Special castings . . . . .	463.75
Hydrants, gates, etc. . . . .	389.50
Lead . . . . .	3.12
Lead pipe . . . . .	188.80
Sidewalk boxes . . . . .	140.00
Cement-lined service pipe . . . . .	287.42
Plain iron " " . . . . .	247.60
Brass valves, fittings, etc. . . . .	494.28
Meters and duplicate parts for same . . . . .	257.90
Iron fittings . . . . .	133.40
2 horses, wagons, etc. . . . .	566.00
Construction tools . . . . .	204.79
Service " . . . . .	439.76
Meter " . . . . .	80.25
Stock and tools at pumping station . . . . .	105.75
	<hr/>
	\$5,288.08



## SUMMARY OF STATISTICS

AS RECOMMENDED BY THE

## NEW ENGLAND WATER WORKS ASSOCIATION.

## BROCKTON WATER WORKS, PLYMOUTH COUNTY, MASS.

Population by census of 1890	27,294
Date of construction	1880
By whom owned	City of Brockton.
Source of supply	From reservoir situated in Town of Avon.
Mode of supply	Pumping into Stand-pipe.

## PUMPING.

1 Builders of pumping machinery, Henry R. Worthington.	
<i>b.</i> Bituminous.	
<i>d.</i> George's Creek.	
2 Description of coal	<i>e.</i> Price per gross ton, delivered \$5.28
	<i>f.</i> Percentage of ash . . . 9 7-10
	<i>g.</i> Wood per cord . . . \$4.00
3 Coal consumed for the year in pounds . . .	468,972
4 <u>Pounds of wood consumed</u>	
3	= coal in pounds . . . 250
5 Total coal consumed for year (3) and (4) in pounds	469,222
6 Total pumpage for year in gallons . . .	252,780,531
8 Average dynamic head against which pump works .	60
9 Number of gallons pumped per pound coal (3) .	568
10 Duty — using following formula, making no deductions for banking, heating, or anything else.	
Duty = $\frac{\text{Gallons pumped (6)} \times 8.34 \times 100 \times \text{dynamic head (8)}}{\text{Total fuel consumed (5)}}$	
	26,957,683
Cost of pumping, figured on Pumping Station expenses, viz. . . . .	\$2,773.76
11 Per million gallons raised against dynamic head .	\$10.90
12 “ “ “ “ one foot high (dynamic) .	\$ .18

## Cost of pumping, figured on Total Maintenance,

viz. . . . . \$29,597.49

## SEE FINANCIAL C. C.

13	Per million gallons raised against dynamic head .	\$113.00
14	“ “ “ “ one foot high (dynamic) .	\$1.88

## FINANCIAL MAINTENANCE.

## RECEIPTS.

## EXPENDITURES.

## From Consumers.

A. Water rates (Meter)	\$26,250.78	A.A. Management and repairs . . . . .	\$ 6,911.66
B. “ “ Fixtures	9,991.62	B.B. Interest on bonds	22,685.83
C. Net receipts for water	\$36,242.39	C.C. Total maintenance	\$29,597.49
D. Miscellaneous . . .	109.81	D.D. Balance carried to Sinking Fund .	9,754.71
E. Total . . . . .	\$36,352.20		
From Public Funds			
F. Hydrants . . . . .	\$3,000.00		
K. Gross receipts from all sources . . . . .	\$39,352.20	E.E. Total . . . . .	\$39,352.20

## CONSTRUCTION.

R. From balance of previous year . . . . .	\$ 2,332.24	F.F. Extension of mains	\$21,564.77
S. From bonds . . . . .	25,000.00	I.I. Total construction for year . . . . .	21,564.77
U. “ services . . . . .	3,172.79	J J. Balance . . . . .	8,940.26
V. Total . . . . .	\$30,505.03	K.K. Total . . . . .	\$30,505.03
W. Net cost of works to date . . . . .			\$642,699.85
X. Bonded debt at this date . . . . .			\$558,000.00
Y. Value of Sinking Fund at this date . . . . .			\$146,282.82
Z. Rate of interest . . . . .			4 per cent.

## CONSUMPTION.

1.	Estimated total population at date . . .	30,000
2.	“ “ “ on lines of pipe at date . . . . .	27,000
3.	Estimated population supplied at date .	24,000
4.	Total number gallons consumed for year	266,642,565
5 and 6.	Passed through meters about (galls.) . . . . .	90,000,000
7.	Average daily consumption . . . . .	730,527
8.	Gallons per day to each inhabitant (1) .	24 - -
9.	“ “ “ “ “ consumer (3) .	30 - -
10.	“ “ “ “ “ tap (distribution 22) . . . . .	200 - -

## DISTRIBUTION.

*Mains.*

1. Kind of pipe used ; wrought iron, cement lined, and cast iron.
2. Sizes from 6 inch to 30 inch.
3. Extended, 10,995 feet.
4. Discontinued, 00 feet.
5. Total now in use, 48.82 miles.
6. Cost of repairs per mile, \$3.21.
7. Number of leaks per mile, .43
9. Hydrants added, 20.
10. Number now in use, 421.
11. Number of stop gates added, 20.
12. Number now in use, 379.
14. Number of blow-off gates, 12.
15. Range of pressure on mains at center for day and night,  
53 to 60 pounds.



*Services.*

16. Kind of pipe used, wrought iron, cement lined.
17. Sizes, 1 to 2 inches.
18. Extended, 4,273 feet.
19. Discontinued, 00 feet.
20. Total now in use, 16.74 miles.
21. Service taps added, 175.
22. Number now in use, 3,650.
23. Average length of services laid during past year, 24 feet.
24. Average cost of service past year, \$8.37.
25. Meters added, 235.
26. Number now in use, 2,258.

Respectfully submitted,

E. H. REYNOLDS,

F. B. GARDNER,

HORACE KINGMAN,

*Water Commissioners.*





